

**Universal Innovative Molecular Fingerprint
Biological Bar-Code for Geographical Origin
Applications to Fruits from Africa, Europe & Latin America**

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Abstract

The trade would intensify and extend to the entire planet. The consumer is demanding and sensitive to the quality and origin of food products. The molecular technique generated by PCR-DGGE was used to detect the variation in the microbial community structures of fruits (El Sheikha *et al.*, 2009a). We applied this new technique on Physalis fruits from three countries (Egypt, Colombia, Uganda) and on shea tree from four countries (Cameroon, Mali, Senegal, Uganda) (El Sheikha *et al.*, 2009b) and on clementine from Spain and Morocco (Le Nguyen *et al.*, 2008). The DGGE gels showed some significant differences in the migration patterns. However, the duplicates for each sampling location gave statistically similar DGGE patterns throughout the study. We demonstrated that there was a link between the microbial populations *yeast and bacterial flora* and the geographical area. When the 16S and 26S rDNA profiles were analyzed by multivariate analysis, distinct microbial communities were detected. The band profiles from different countries were different and were specific for each country and could be used as a bar code to discriminate the origin of the fruits. This method is a new traceability tool which provides fruit products with a unique bar code and makes it possible to trace back the fruits to their original country.

Key words: Universal genetic fingerprint, PCR-DGGE, Physalis, Shea tree fruits, Clementine, Microbial communities, Origin